

REMARKS/ARGUMENTS

Applicant responds herein to the Office Action dated September 22, 2005.

Claim 1 is stated to be anticipated by McDiarmid et al. (6,301,434). Claims 2-11 and 13 are stated to be obvious over McDiarmid, and further in view of Sajoto et al. (6,035,101), Mezey, Sr. (6,331,212) and Mimura et al. (4,567,352). Reconsideration is requested in view of the following remarks.

The amended independent claim 2 recites “a light shield provided in said chamber...wherein said light shield is a quartz member with a quartz surface roughened by honing.” An apparatus constructed according to claim 2 is such that flash light emitted from flash lamps can be prevented from reaching an innermost surface of the chamber, so that oxidation of the innermost surface as a result of flash light irradiation can be suppressed.

The primary McDiarmid reference does not need to tackle the problem of the present invention, since it does not utilize high temperature flash lamps, but rather tungsten-halogen lamps. That reference discloses providing opaque quartz liners 164 along inner walls of a chamber in a thermal processing system of the light irradiation type. Furthermore, McDiarmid only discloses forming the liners 164 of opaque quartz, and fails to disclose a light shield made of quartz with a quartz surface that has been roughened by honing, as defined in independent claim 2.

The Office Action is relying on Sajoto for the proposition that this reference discloses a chamber lid liner 70 and a chamber wall liner 72 with a roughened surface. In actuality, Sajoto is essentially directed to an alloy heater, and not to a heat treatment apparatus that utilizes light irradiation for heating. The Sajoto reference discloses that “both liners are preferably made of a metal, such as aluminum, and may be bead blasted to increase the adhesion of any film deposited thereon”, as described at column 9, lines 15-17 of this reference. Significantly, however, this secondary reference fails to disclose roughening a quartz surface of a quartz light shield by honing. The disclosure of the Sajoto reference does not, in fact, teach one of ordinary skill in the art to roughen the surface of a quartz liner that acts as a light shield and to do so by honing.

The Office Action has further relied on Mezey for the proposition that it teaches a removable shield/liner and has further relied on Mimura for the proposition that it teaches the utilization of flash lamps as a heat source. But in fact, the likelihood of one of ordinary skill in the art combining all these disparate teachings from different references does not follow from the teachings of the references

themselves. In point in fact, Mezey describes providing a liner 88 removably from a housing 30 and a heat treatment apparatus so that the liner 88 can be removed and cleaned. This reference does not, however, teach or suggest that such a liner 88 be provided with light shielding functionality. Rather, it only teaches that "liner 88 is arranged so as to substantially prevent deposition onto the interior surface of housing 30 (column 7, lines 1-7), to prevent contaminants from reaching the interior surfaces." Stated differently, the function of the liner 88 in this reference is not for the purposes of shielding or blocking light, but rather for preventing deposition of contaminants onto the housing. Moreover, Mezey similarly does not discuss roughening of a quartz surface which is part of a quartz light shield by the process of honing.

Lastly, Mimura discloses flash discharge lamps 5 and heating means 9 built into an object-supporting table 8. This reference fails, however, to disclose a light shield for shielding light from the flash discharge lamps 5. Therefore, Mimura fails to disclose roughening a quartz surface of a quartz light shield by the process of honing.

Based on the foregoing remarks, it has been established that none of the references describe "providing a light shield which is a quartz member with a quartz surface roughened by honing in a chamber", as clearly recited in the applicant claims. Nor does combining the teachings from the other references with the primary reference lead to the applicant's invention. In fact, there is no teaching in any of the references that their teachings should be combined along the -- hindsight driven -- analysis provided in the Office Action.

Turning to claims 8-11, it is noted that independent claim 8 recites "a liner removably provided at said chamber along an inner wall side surface and an inner wall base surface of said chamber to cover said side and base surfaces, said liner having a roughened outer surface facing said side and base surfaces of said chamber and an inner surface having greater smoothness than said outer surface." According to the invention of claim 8, even when a substrate is caused to crack due to flash light irradiation, the liner is in a position to receive the fragments of the substrate and thus, protect the chamber which can thereafter be easily cleaned by simply detaching the liner from the chamber. The smoothness of the inner surface of the liner surface is especially suitable to promote cleaning of the liner itself after detachment.

In contrast, McDiarmid only discloses forming the liners 164 of opaque quartz, but fails to disclose a liner having a roughened outer surface facing side and base surfaces of the chamber

and an inner surface having greater smoothness than the outer surface, as recited in independent claim 8.

The disclosures of Sajoto, Mezey and Mimura have been provided above and it has already been noted that none of these references discloses a liner having a roughened outer surface facing side and base surfaces of a chamber and an inner surface having greater smoothness than the outer surface.

Thus, even a combination of all of these references fails to teach all of the features of independent claim 8 and its dependent claims. Indeed, there is nothing in these references to suggest their complex combination, as suggested in the Office Action.

Turning to claims 13-17, it is noted that independent claim 13 recites "a light shield provided in said chamber...wherein said has a roughened outer surface and an inner surface having greater smoothness than said outer surface." This particular feature has been discussed above and it has been pointed out that none of the references teach that feature, whether the references are considered singly or in any combination. Thus, the apparatus recited in claim 13 is neither anticipated nor rendered obvious by the references of record. Thus, claims 13-17 define over the art.

Turning to newly presented claims 18-20, it is noted that independent claim 18 recites "a liner removably provided at said chamber along an inner wall side surface and an inner wall base surface of said chamber to cover said side and base surfaces, wherein said light shield is a quartz member with a quartz surface roughened by honing." This communication has already amply discussed above the lack of any teaching or suggestion in the references of record of this particular feature. For these reasons, applicant asserts again that claim 18 and its dependent claims are similarly clearly distinguishable over the prior art of record.

Accordingly, the Examiner is respectfully requested to reconsider the application, allow the claims as amended and pass this case to issue.

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